# HAZARD COMMUNICATION

# PROGRAM

I. **PURPOSE AND SCOPE:** This document establishes general policy and procedures for a Hazard Communication Program to inform employees of chemical hazards they may be exposed to in the workplace under normal conditions of use, or in a foreseeable emergency.

II. **APPLICABILITY:** The Hazard Communication Program is applicable to all civil servants working at the organization, including remote facilities and operations, who engage in the use of hazardous chemicals. Employees engaged in the **laboratory** use of hazardous chemicals shall comply with the latest revision of GSFC's Chemical Hygiene Plan (GHB 1790.1) which outlines the requirements of the Occupational Safety and Health Administration's Laboratory Standard, 29 CFR 1910.1450. OSHA requires contractors to also maintain a Hazard Communication Program equivalent to or exceeding federal regulations.

III. **POLICY:** It is the policy of this organization to establish and implement a comprehensive Hazard Communication Program which fully meets the requirements of 29 CFR 1910.1200, the Hazard Communication Standard, promulgated by the Occupational Safety and Health Administration (OSHA). Accordingly, this organization shall ensure that:

**A**. Information on the hazards of chemicals are transmitted to the affected employees (including cryogenic materials and compressed gases);

**B.** Inventories of the hazardous chemicals stored or used are maintained and updated regularly;

**C.** Material Safety Data Sheets (MSDS's) for hazardous chemicals are maintained in each work area where the chemicals are used or stored;

**D.** An employee training program is implemented to effectively provide employees with information and handling precautions on hazardous chemicals in their workplace. This training shall be provided at the time of the employees' initial assignment and whenever a new hazard is introduced into the work area; and

**E.** Containers of hazardous chemicals are appropriately labeled in accordance with OSHA's Hazard Communication Standard.

IV. **RESPONSIBILITIES:**

**A.** **The ITC Engineering Center Chief** has overall responsibility for ensuring that the Hazard Communication Program is implemented in his/her areas of responsibility. Additionally, he/she shall:

(1) Ensure that necessary resources needed to comply with the Hazard Communication Program are available;

(2) Ensure that line management attends required training and responds to requests for information in a timely manner; and

(3) Ensure that new employees are appropriately trained and certified.

**B. All Supervisors within the organization shall** identify and acquire necessary resources needed to implement the Hazard Communication Program for their areas of responsibility. Additionally, they shall:

(1) Develop, implement, and maintain a written Hazard Communication Program specific to their area of authority. The "site-specific" written Hazard Communication Program shall incorporate the requirements outlined in this document;

(2) Ensure that MSDS's are maintained and that for every hazardous chemical in their area of authority, an updated MSDS is readily available to employees in or near the work locations where the hazardous chemicals are used; and

(3) Ensure that an accurate inventory of the hazardous chemicals used in the work area is compiled and maintained. An updated inventory list shall be forwarded to the Safety and Environmental Branch at the beginning of each fiscal year.

**C. Line Supervisors** have the responsibility for direct action and enforcement to ensure compliance with the Hazard Communication Program. Line supervisors shall:

(1) Maintain copies of MSDS's, which are readily accessible to employees on all work shifts, for each hazardous chemical in the workplace;

(2) Maintain an accurate inventory of the hazardous chemicals used in the work area. Provide an updated inventory list to higher management prior to the beginning of each calendar year;

(3) Ensure that the containers of hazardous chemicals in the work area are appropriately labeled. Containers without appropriate labels shall be sent back to the supplier unless the contents of the container are definitely known. Where contents are known, the container shall be immediately labeled with the appropriate information

(4) Attend required hazard communication training. The level of training required will be determined by the extent with which chemical handling by the supervisor or his/her employees occurs. Supervisors whose employees routinely handle chemicals are also required to attend **Hazard Communication** training;

(5) Ensure that employees under their supervision attend required Hazard Communication training sessions;

(6) Train employees on the specific hazards of the chemicals used in the work area. Training shall be conducted at the time of an employees' initial assignment, an employee's change in

assignment, and whenever a new chemical, which represents a new hazard, is introduced into the work area;

(7) Ensure that the personnel not normally assigned to the work area, such as maintenance and contractor personnel, are informed of the hazards of the chemicals to which they may be exposed while present at the job site;

(8) Enforce safety practices such as using appropriate personal protective equipment (PPE); implement safety precautions and procedures for operations which involve the use of hazardous chemicals; utilize the MSDS's as references; and enforce GSFC smoking policies; and

(9) Develop operating procedures for each of the routine tasks and known non-routine tasks involving hazardous materials. Ensure that workers review these procedures prior to performing these tasks.

**D. All Employees** shall:

(1) Read the MSDS's and labels to become familiar with the safety precautions, chemical and physical properties, and potential health hazards of the chemicals prior to handling the chemicals;

(2) Exercise all necessary precautions in the safe use of hazardous chemicals, including wearing personal protective equipment as specified on the MSDS or recommended by Safety and Environmental Branch;

(3) Notify the supervisor of any apparent deficiencies involving hazard communication, such as missing MSDS's, improperly labeled containers of hazardous chemicals, chemicals not listed on the hazardous chemical inventory for the work area, etc.;

(4) Participate in scheduled training sessions for hazard communication;

(5) Report all working conditions which may cause substantial personal exposure to hazardous chemicals to a supervisor; and

(6) Review operating procedures prior to performing tasks involving hazardous materials.

**E. The Safety and Environmental Branch** or its designated representative has overall responsibility for monitoring this program. Specific responsibilities include but are not limited to the following:

(1) Provide a written Hazard Communication Program which may be adopted by each GSFC organization;

(2) Assist managers in determining the level and content of training required by each organization to adequately inform employees of the hazards of workplace chemicals to fully comply with the Hazard Communication Program;

(3) Audit various GSFC organizations to ensure that employees are trained in accordance with the Hazard Communication Program;

(4) Provide generic revisions of the Hazard Communication Program

on an "as needed" basis;

(5) Alert GSFC organizations, in writing, of any chemicals which are banned, for purposes of safety and health, at GSFC; and

(6) Provide technical support to GSFC organizations including but not limited to hazard analyses of the workplace, safety inspections and audits, observations and reviews of work practices, procedures, personal protective equipment, and procurements.

**F. Contracting Officers Technical Representatives (COTR's)** shall:

(1) Ensure that Contractors administer a **Hazard Communication Program** which complies with **29 CFR 1910.1200**, the Hazard Communication Standard promulgated by the Occupational Safety and Health Administration (OSHA);

(2) Provide Contractors with a copy of the Hazard Communication Program, and ensure that Contractors have access to MSDS's of the chemicals used or stored in the areas where they will perform their stated contractual duties;

(3) Ensure that Contractors are informed of precautionary measures which need to be taken during the workplace's normal operating conditions and in foreseeable emergencies;

(4) Ensure that Contractors maintain MSDS's on site for hazardous chemicals they use at their work location and that these MSDS's are available for NASA or other Contractor personnel to review;

(5) Ensure that Contractors inform personnel working in areas where they will perform their stated contractual duties of precautionary measures which must be taken, prior to or during the stated work period, to ensure that the contractor's work does not present a health or safety hazard
(e.g. a Painting Contractor should notify occupants at least 24 hours prior to painting a room so that appropriate measures may be taken to protect equipment or to relocate personnel who may be affected by odors associated with painting);

(6) Ensure that Contractors understand that containers of hazardous chemicals which they import or use at GSFC are labeled in accordance with the provisions of the OSHA Hazard Communication Standard; and

(7) Ensure that the Contractors maintain a list of the hazardous materials brought onto the GSFC facility, and that a copy of this list is forwarded to the Safety and Environmental Branch at the beginning of each calendar year.

**G. Contractors** are required by OSHA to:

(1) Administer a Hazard Communication Program which fully complies with 29 CFR 1910.1200, the Hazard Communication Standard;

(2) Maintain an inventory and MSDS's for the hazardous chemicals used on-site and ensure that these MSDS's are readily available for NASA or other Contractor personnel to review;

(3) Ensure that an inventory of the hazardous chemicals used in the work area is compiled and maintained. An updated inventory list, adding new chemicals and deleting chemicals no longer used, shall be forwarded to the COTR at the beginning of each calendar year. Inventory lists must contain the following information:

a. Name of the Contractor.
b. Chemical and common name.
c. Primary hazardous ingredient, if known.
d. Quantity of material.
e. Location of chemical stored and/or used (building and room #).
f. Manufacturer's name, address and phone number.
g. Indication of whether a corresponding MSDS is available for the material.
h. Date the list was updated.

(4) Inform appropriate personnel working in areas where contractual duties are to be performed of actions, such as the use of hazardous chemicals, which may present a health or safety hazard to the occupants. Notification must be made in a timely manner to enable appropriate precautionary measures to be taken; and

(5) Ensure that containers of hazardous chemicals imported or used at GSFC are labeled in accordance with the provisions of the OSHA Hazard Communication Standard.

## V. LABELING AND OTHER FORMS OF WARNING:

**A.** Every container of hazardous materials shall be properly labeled or tagged with the following information:

(1) Identity of the hazardous material(s) contained.

(2) Appropriate **hazard** warning including target organ effects; and

(3) Name and address of the chemical manufacturer, importer, or other responsible party.

**B.** Containers without appropriate labels shall be sent back to the supplier unless the contents of the container are definitely known. When contents are known, the container shall be immediately labeled with the appropriate information.

**C.** Labels or tags shall be legible, written in English, and prominently displayed on the container. Vats, dip tanks, etc., may be labeled with placards or other signs in close proximity to the vat, dip tank, etc., as long as the contents are clearly understood.

**D.** Portable containers into which hazardous chemicals are transferred from labeled containers, and are intended only for the immediate use of the employee who performs the transfer are exempt from these labeling requirements. These exempt containers should still be labeled with the identity of the hazardous material.

**E.** Pipes, ducts, and valves carrying hazardous materials shall be clearly identified.

## VI. HAZARDOUS MATERIALS LIST AND INVENTORY:

**A.** A hazardous materials list for each work space is required and shall be available to all affected employees. A sample hazardous materials list can be found on Appendix C; however, lists may be kept electronically. This list shall be maintained by the work area supervisor.

(1) The hazardous materials list shall include the hazardous materials

within the supervisor's work area which are either stored or utilized by the supervisor's employees. The hazardous materials list shall contain the following information:

**a.** Identification of work group or code using the chemicals on the hazardous materials list.
**b.** Chemical, common, or trade name as stated on product label.
**c.** Quantity of material.
**d.** Location where the chemical is stored (Building and Room No.)
**e.** Manufacturer's (or responsible party's) name, address and phone number.
**f.** Indication that a corresponding MSDS is available for the material.
**g.** Date the list was updated.

(2) Supervisors shall update the lists whenever new chemicals are introduced into the work area, or when use of a chemical in a work area is discontinued. The list shall be reviewed for accuracy at least quarterly.

## VII. MATERIAL SAFETY DATA SHEET (MSDS):

**A.** The material safety data sheet is a document which describes the physical and chemical properties of products, their physical and health hazards, and precautions for safe storage, handling and use. An MSDS is required for each hazardous chemical that is used in the facility. Employees are not required to work with a hazardous material until an MSDS is made available for their review.

**B.** Supervisors are responsible for ensuring that an MSDS accompanies or precedes each initial shipment of hazardous materials. The supervisor shall contact the manufacturer, supplier or distributor to obtain the MSDS prior to using the hazardous material. The Safety and Environmental Branch may be contacted to provide assistance with obtaining the appropriate MSDS.

**C.** MSDS's shall be kept in a central location in the work area which is accessible to employees on all shifts. All employees and affected Contractors shall be informed of the central location where MSDS's are kept.

**D.** MSDS's shall be maintained in a notebook in an organized manner (i.e. alphabetically) so that the MSDS can be readily located and reviewed by an employee when required.

(1) MSDS's shall be dated immediately and placed into the notebook upon its receipt. The most current version of the MSDS should be obtained from the manufacturer, supplier or distributor every two years.

(2) When the use of a chemical is discontinued, the MSDS's shall be removed from the notebook, notated "**DISCONTINUED**" along with the date use of the chemical was discontinued, and placed in a "discontinued file". The file shall be maintained for at least 30 years to provide a record of employee exposure in the event of future medical complications.

**E.** Although the format for MSDS's may differ from company to company, the OSHA standard 29 CFR 1910.1200 (g) requires that all MSDS's contain information outlined in **Appendix B**.

## VII. EMPLOYEE TRAINING:

**A.** Employees who work with, or are potentially exposed to, hazardous chemicals during the normal course of their work, or in a foreseeable emergency, shall receive information and training at the time of the employees' initial assignment, a change in the employees' assignment, and whenever a new hazard is introduced into the employees' work areas.

**B.** Training shall include:

(1) The requirements of the OSHA Hazard Communication Standard and employee rights and responsibilities;

(2) Operations in employees' work areas which involve the use of hazardous chemicals;

(3) The location and availability of the Hazard Communication Program, the hazardous chemical inventories, and the MSDS's of the hazardous chemicals in the work area;

(4) Methods and observations that may be used to detect the presence or release of a hazardous chemical in the work area;

(5) The physical and health hazards of the chemicals in the work area;

(6) The measures employees can take to protect themselves from these hazards, such as appropriate work practices, emergency procedures, and use of personal protective equipment; and

(7) The contents of the Hazard Communication Program, including an explanation of the labeling system and the MSDS, and how employees can obtain and use the appropriate hazard information.

**C.** Each employee involved in the use and handling of chemical agents or potentially exposed thereto shall receive general training relative to hazard communication requirements. Specific training relative to the hazards of a chemical or chemicals in the work area shall be provided to applicable employees by the workplace supervisor.

**D.** Supervisors whose employees routinely handle chemicals are also required to attend Hazard Communication Training.

**E.** Additional training shall be provided as new information becomes available on a specific agent, when special precautions are needed due to the introduction of new chemicals into the work area, when a change in chemical usage or chemical work practices occurs, or as considered necessary and appropriate to refresh and emphasize potential hazards associated with any given hazardous chemicals.

**F.** Training may be provided on groups of hazardous chemicals in a work area when it is more appropriate to address them as a process or group of chemicals rather than as individual chemicals. For example, in pilot research projects or other operations/processes where many hazardous chemicals are present in small quantities and used sporadically, training can focus on specific groups of hazardous chemicals, such as organic, inorganic, acids, bases, oxidizers, and/or other specific groups rather than on each specific chemical. A basic training course on hazardous chemical safety or similar generalized training, coupled with MSDS and other handout literature, may suffice in some situations.

**G.** In some cases, hazard communication may be incorporated into operating procedures, and may be used to inform employees of the hazards of routine, as well as, non-routine tasks.

**H.** All training shall be documented by the Supervisor. A general training file shall be maintained specifying the names of personnel trained, the date of training, and the type of training. Division or Office Chiefs shall certify that employees have been appropriately trained.

## VIII. REFERENCES

**A.** Occupational Safety and Health Administration (OSHA), Hazard Communication Standard

**B.** Occupational Safety and Health Administration (OSHA), Laboratory Standard, 29 CFR 1910.1450.

**C.** National Aeronautics and Space Administration,
Health Standard on Hazard Communication, NHS/IH-1845.3.

**D.** United States Department of Agriculture,
Hazard Communication - A Program Guide for Federal Agencies. August 1987.

**APPENDIX A**

**HAZARD COMMUNICATION DEFINITIONS**

**ARTICLE:** A manufactured item other than a fluid or particle: (i) which is formed to a specific shape or design during manufacture; (ii) which has end use function(s) dependent in whole or in part upon its shape or design during end use; and (iii) which under normal conditions of use does not release more than very small quantities, e.g., minute or trace amounts of a hazardous chemical, and does not pose a physical hazard or a health risk to employees.

**CHEMICAL**: Any element, chemical compound or mixture of elements and/or compounds.

**CHEMICAL NAME**: The scientific designation of a chemical in accordance with the nomenclature system developed by the International Union of Pure and Applied Chemistry (IUPAC) or the Chemical Abstracts Service (CAS) rules of nomenclature, or a name which will clearly identify the chemical for the purpose of conducting a hazard evaluation.

**COMMON NAME**: Any designation or identification such as code name, code number, trade name, branch name or generic name used to identify a chemical other than by its chemical name.

**CONTAINER**: Any bag, barrel, bottle, box, can, cylinder, drum, reaction vessel, storage tank, or the like that contains a hazardous chemical. For purposes of this section, pipes or piping systems, and engines, fuel tanks, or other operating systems in a vehicle, are not considered to be containers.

**EMPLOYEE**: A worker who may be exposed to hazardous chemicals under normal operating conditions or in foreseeable emergencies. Workers such as office workers or bank tellers who encounter hazardous chemicals only in non-routine, isolated instances are not covered.

**EXPOSURE OR EXPOSED**: An employee is subjected in the course of employment to a chemical that is a physical or health hazard, and includes potential (e.g. accidental or possible) exposure. "Subjected" in terms of health hazards includes any route of entry (e.g. inhalation, ingestion, skin contact or absorption).

**FORESEEABLE EMERGENCY**: Any potential occurrence such as, but not limited to, equipment failure, rupture of containers, or failure of control equipment which could result in an uncontrolled release of a hazardous chemical into the workplace.

**HAZARD WARNING**: Any words, pictures, symbols, or combination thereof appearing on a label or other appropriate form of warning which convey the specific physical and health hazard(s), including target organ effects, of the chemical(s) in the container(s).

**HAZARDOUS CHEMICAL**: Any chemical which is a physical hazard or a health hazard.

**HEALTH HAZARD**: A chemical for which there is statistically significant evidence based on at least one study conducted in accordance with established scientific principles that acute or chronic health effects may occur in exposed employees. The term "health hazard" includes chemicals which are carcinogens, toxic or highly toxic agents, reproductive toxins, irritants, hematopoietic system, and agents which damage the lungs, skin, eyes, or mucous membranes.

**IDENTITY**: Any chemical or common name which is indicated on the material safety data sheet (MSDS) for the chemical. The identity used shall permit cross-references to be made among the required list of hazardous chemicals, the label and the MSDS.

**IMMEDIATE USE**: The hazardous chemical will be under the control of and used only by the person who transfers it from a labeled container and only within the work shift in which it is transferred.

**LABEL**: Any written, printed, or graphic material displayed on or affixed to containers of hazardous chemicals.

**LABORATORY SCALE**: Work with substances in which the containers used for reactions, transfers, and other handling of substances are designed to be easily and safely manipulated by one person. "Laboratory scale" excludes those workplaces whose function is to produce commercial quantities of materials.

**LABORATORY USE OF HAZARDOUS CHEMICALS**: Handling or use of such chemicals in which all of the following conditions are met: (i) Chemical manipulations are carried out on a "laboratory scale"; (ii) Multiple chemical procedures or chemicals are used; (iii) The procedures involved are not part of a production process, nor in any way simulate a production process; and (iv)

Protective laboratory practices and equipment are available and in common use to minimize the potential for employee exposure to hazardous chemicals.

**MATERIAL SAFETY DATA SHEET (MSDS):** Written or printed material concerning a hazardous chemical which is prepared in accordance with paragraph (g) of 29 CFR 1910.1200, to be provided by the manufacturer, importer, or distributor of the chemical.

**PHYSICAL HAZARD**: A chemical for which there is scientifically valid evidence that it is a combustible liquid, a compressed gas, explosive, flammable, an organic peroxide, an oxidizer, pyrophoric, unstable (reactive) or water-reactive.

**USE**: To package, handle, react, emit, extract, generate as a byproduct, or transfer.

**WORK AREA**: A room or defined space in a workplace where hazardous chemicals are produced or used, and where employees are present.

**WORKPLACE:** An establishment, job site, or project, at one geographical location containing on or more work areas.

## APPENDIX B

1. **Chemical Identity**

   **a.** If the chemical is a single substance, it should have the chemical, trade, and common name(s).

   **b.** The chemical identity on the MSDS should be cross-referenced to an identifier found on the label.

2. **Hazardous Ingredients**

   **a.** If the hazardous chemical is a mixture which has been tested as a whole to determine its hazards, the chemical and common names of the ingredients that are associated with the hazards, and the common name of the mixture itself must be listed.

   **b.** If the chemical is a mixture which has not been tested as a whole (most probable since very few mixtures are tested), all ingredients that are not carcinogens, but are health or physical hazards and comprise 1 percent or more of the mixture, must be listed.

   **c.** Carcinogens (e.g., OSHA list, IARC Monographs, NTP list) must be listed if they are present in the mixture at levels of 0.1 percent or greater.

   **d.** All components of a mixture that have been determined to present a physical hazard must be listed.

3. **Physical and Chemical Characteristics**

   **a.** The physical and chemical characteristics of the hazardous substance reflect the properties of the compound. These include such items as boiling and freezing points, density, vapor pressure, specific gravity , solubility, volatility, and the product's general appearance and odor.

4. **Physical Hazards**

   **a.** The compound's potential for fire and explosion must be described. This section explains the fire hazards of the product and the conditions under which the product could ignite or explode. Most MSDS's also provide information on recommended extinguishing agents and fire fighting methods.

   **b.** This section also presents information about other chemicals and substances with which the chemical is incompatible, or with which it reacts. Information on decomposition products, such as carbon monoxide, is included.

5. **Health Hazards**

   **a.** The health hazards of the chemical, together with signs and symptoms of exposure must be listed. In addition, any medical conditions which are generally associated with exposure to the compound, or which exposure to the compound can aggravate, must be included. The specific types of health hazards defined in the standard include: carcinogenicity, corrosives, toxicity, irritants, sensitizers, mutagenicity, teratogenicity, and target organ effects, such as, liver, kidney, nervous system, blood, lung, mucous membranes, reproductive,

skin, and eye effects.

**b.** The route of entry section describes the primary pathway by which the chemical enters the body. There are three principal routes of entry: inhalation, skin, and ingestion.

**c.** This section of the MSDS supplies the OSHA Permissible Exposure Level (PEL), the American Conference of Government Industrial Hygiene (ACGIH) Threshold Limit Value (TLV), as well as other exposure levels used or recommended by the chemical manufacturer.

**d.** If the compound is listed as a carcinogen by OSHA, NTP or IARC, it must be so indicated on the MSDS.

6. **Special Precautions, Spill, Leak, and Cleanup Procedures**

**a.** The standard requires the preparer to describe applicable precautions for safe handling and use which are known. These include recommended industrial hygiene practices, precautions to be taken during repair and maintenance of equipment, and procedures for cleaning up spills and leaks. Some companies also use this section to include useful information not specifically required by the standard, such as EPA waste disposal methods and State and local requirements.

7. **Control Measures**

**a.** The standard requires the preparer of the MSDS to list any generally applicable control measures. These include engineering controls, safe handling procedures, and personal protective equipment. Information on the use of goggles, gloves, body suits, respirators , and face shields is often included.

8. **Emergency and First Aid Procedures**

**a.** This part of the MSDS deals with the actions that should be taken in the event of an accidental overexposure. Different procedures are usually given to deal with inhalation, ingestion, skin, or eye exposures.

9. **Responsible Party**

**a.** The standard specifies that the MSDS preparation date or the date of the last change be provided. In addition, the name, address, and telephone number of the chemical manufacturer, importer, or other responsible party preparing or distributing the MSDS must be included.